

What is claimed is:

1. A method of curing adhesive between substrates, comprising the steps of:
emitting ultraviolet light using a light emitting semiconductor element or a gas
5 laser, and
radiating said ultraviolet light onto adhesive spread between first and second
substrates through at least one of said first substrate and said second substrate to cure or
semi-cure said adhesive.
- 10 2. A method of curing adhesive between substrates according to claim 1, wherein
said ultraviolet light has wavelengths in a range where a transmissivity of said adhesive
before curing is lower than the transmissivity of said adhesive after curing.
3. A method of curing adhesive between substrates according to claim 1, wherein
15 the wavelength of said ultraviolet light is mainly in a range of 280 to 450nm.
4. A method of curing adhesive between substrates according to claim 1, wherein
distance between an emission surface of ultraviolet light from said light emitting
semiconductor element or said gas laser and an irradiated surface of said substrate is
20 10mm or less.
5. A method of curing adhesive between substrates according to claim 1, wherein
during irradiation by said ultraviolet light, said ultraviolet light and said adhesive are
moved relative to each other.

6. A method of curing adhesive between substrates according to claim 1, wherein a recording layer is formed on at least one of said first substrate and second substrate, and the ultraviolet light that said light emitting semiconductor element or said gas laser emits is radiated from the circumference side of said first or second substrates onto said adhesive.

7. A method of curing adhesive between substrates according to claim 1, further comprising a step wherein after said adhesive is semi-cured or cured by irradiation of said ultraviolet light, said substrate is transferred to a next process, and said adhesive is cured by irradiation by ultraviolet light.

8. A method of curing adhesive between substrates according to claim 1, further comprising the step of:

rotating said first and second substrates at high speed to spread said adhesive applied between said first and second substrates; and

on completion of said high speed rotation, radiating said ultraviolet light progressively from the internal circumference of said first substrate or said second substrate to the external circumference, while said substrate is rotated slowly, or stopped.

9. A method of curing adhesive between substrates according to claim 1, further comprising the step of:

radiating said ultraviolet light onto said adhesive protruding from between said first substrate and said second substrate in an atmosphere where an oxygen concentration is lower than in air.

10. A method of curing adhesive between substrates according to claim 1, wherein a thickness of an adhesive layer between said first and second substrates is detected, and said ultraviolet light is radiated when said thickness reduces to a preset thickness with said high speed rotation.

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11. An apparatus for curing adhesive between substrates which radiates ultraviolet light onto an adhesive spread between first and second substrates through at least one of said first substrate and second substrate for curing, comprising:

a support mechanism which supports said first substrate and second substrate;

10 a semiconductor light emitting apparatus having a plurality of light emitting semiconductor elements arranged facing a region where said adhesive is cured; and

a positioning mechanism which positions said semiconductor light emitting apparatus such that said light emitting semiconductor elements are a predetermined distance away from said adhesive,

15 wherein said adhesive is cured or semi-cured by ultraviolet light emitted from said plurality of light emitting semiconductor elements.

12. An apparatus for curing adhesive between substrates according to claim 11, wherein said positioning mechanism positions said semiconductor light emitting

20 apparatus so that a distance between said light emitting semiconductor elements and said adhesive is within 10mm.

13. An apparatus for curing adhesive between substrates according to claim 11, wherein said light emitting semiconductor elements emit ultraviolet light having a

25 wavelength in a range where a transmissivity of said adhesive before curing is lower than

the transmissivity of said adhesive after curing.

14. An apparatus for curing adhesive between substrates according to claim 11,
wherein said light emitting semiconductor elements are light emitting diodes which
5 mainly emit light with a wavelength within a wavelength range of 280 to 450nm.

15. An apparatus for bonding disc substrates, comprising:
a spinner which spreads adhesive placed between a first substrate and second
substrate, and
10 a curing device which radiates ultraviolet light onto said adhesive through said
substrate to cure it,
wherein said curing device comprises;
a support mechanism which supports said first substrate and second substrate
after said adhesive is spread by said spinner,
15 a semiconductor light emitting apparatus having a plurality of light emitting
semiconductor elements arranged facing a region where said adhesive is cured, and
a positioning mechanism which positions said semiconductor light emitting
apparatus such that said light emitting semiconductor elements are a predetermined
distance away from said adhesive, and
20 said adhesive is cured or semi-cured by ultraviolet light emitted from said
plurality of light emitting semiconductor elements.

16. An apparatus for bonding disc substrates according to claim 15, wherein
said light emitting semiconductor elements of said curing apparatus are arranged
25 in one row or a plurality of rows so as to extend from the internal circumference to the

external circumference of said substrate, and

at least one of said support mechanism and said positioning mechanism rotates said semiconductor light emitting apparatus and said first and second substrates relative to each other.

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17. An apparatus for bonding disc substrates according to claim 15, wherein said light emitting semiconductor elements are fixed onto a printed substrate, and connected to a conductive pattern formed on said printed substrate.

10 18. An apparatus for bonding disc substrates according to claim 15, wherein said light emitting semiconductor elements are light emitting diodes which mainly emit light within a wavelength range of 280 to 450nm.

15 19. An apparatus for bonding disc substrates according to claim 15, wherein said support mechanism is the turntable of said spinner, and after the adhesive between said first substrate and second substrate is spread by high speed rotation of said turntable, said ultraviolet light is radiated onto said adhesive from above said turntable.

20 20. An apparatus for bonding disc substrates according to claim 19, wherein when said ultraviolet light is radiated onto said adhesive, said turntable is rotated.

21. An apparatus for bonding disc substrates according to claim 15, further comprising an emitting device which radiates light onto said adhesive spread by said spinner to semi-cure or cure it for tacking said first substrate and second substrate, and a
25 disc transfer mechanism which transfers the tacked first substrate and second substrate to

said curing device.

22. An apparatus for bonding disc substrates according to claim 21, wherein said emitting device radiates ultraviolet light onto said adhesive located in a non-recording
5 region of the internal circumference of said substrate to semi-cure or cure it for tacking.

23. An apparatus for bonding disc substrates which bonds disc substrates via an adhesive, comprising:

a spinner that rotates said disc substrates stacked via said adhesive at high speed
10 to spread said adhesive between said disc substrates;

a tacking mechanism that radiates light through said disc substrates and starts to cure said adhesive spread between said disc substrates to tack said disc substrates together;

a transfer mechanism which moves the tacked disc substrates to another
15 location; and

a curing device which cures said adhesive.

24. An apparatus for bonding disc substrates according to claim 23, wherein said tacking mechanism radiates light onto said disc substrates mounted on a disc pedestal of
20 said spinner, for tacking.

25. An apparatus for bonding disc substrates according to claim 24, wherein while said disc substrates are rotating at high speed in said spinner, said tacking mechanism radiates light onto said adhesive in a non-recording region of said disc substrates, to
25 stabilize an internal circumference of said adhesive layer.

26. An apparatus for bonding disc substrates according to claim 23, further comprising:

5 a transfer mechanism which transfers the bonded disc substrates to a centering location;

a centering mechanism, which is positioned at said centering location and has a centering member that is inserted into a center hole of said bonded disc substrates to align the internal circumferences thereof; and

10 a transfer mechanism which transfers the tacked disc substrates to said curing device,

wherein said tacking mechanism radiates light through said centered disc substrates and starts to cure said adhesive between said disc substrates to tack said disc substrates together, said transfer mechanism transfers the tacked disc substrates to a curing location, and said curing device cures said adhesive layer between said disc
15 substrates.

27. An apparatus for bonding disc substrates according to claim 23, wherein said tacking mechanism semi-cures or cures said adhesive in a non-recording region, which is a region on said disc substrates where no information is recorded.

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28. An apparatus for bonding disc substrates according to claim 23, wherein said tacking mechanism semi-cures or cures said adhesive in an information recording region of said optical disc substrates.

25 29. An apparatus for bonding disc substrates according to claim 23, wherein said

tacking mechanism emits said light while it is rotated relative to said disc substrates.

30. An apparatus for bonding disc substrates according to claim 23, wherein said tacking mechanism is provided with light emitting diodes, a semiconductor laser, or a gas
5 laser, which generates said light.

31. An apparatus for bonding disc substrates according to claim 23, wherein said tacking mechanism comprises; a tacking emission mechanism which generates light to start curing said adhesive; an arm member at the end of which said tacking emission
10 mechanism is installed; a vertical direction drive unit which supports said arm member and moves it up and down; and a horizontal direction drive mechanism that can support said vertical direction drive mechanism and move it in the horizontal direction.

32. An apparatus for bonding disc substrates according to claim 26, wherein said
15 tacking mechanism radiates light onto said disc substrates mounted on said centering mechanism, for tacking.

33. An apparatus for bonding disc substrates, comprising:
a spinner which rotates a first and second disc substrate stacked via an adhesive
20 at a high speed to spread said adhesive between said disc substrates;
a disc mounting stage which is provided with a centering mechanism that is inserted into a center hole of the disc substrates for which said adhesive has been spread, to align the internal circumferences of said first and second disc substrates; and
a disc substrate transfer mechanism which transfers said disc substrates from
25 said spinner to said disc mounting stage,

wherein said disc mounting stage is provided with an emission mechanism which radiates light onto the disc substrates whose internal circumferences are aligned to start curing the adhesive layer between said disc substrates.

5 34. An apparatus for bonding disc substrates according to claim 33, wherein said emission mechanism semi-cures or cures said adhesive on the whole surface or a partial region of said disc substrates.

35. An apparatus for bonding disc substrates according to claim 33, wherein said
10 emission mechanism semi-cures or cures said adhesive in a non-recording region of said disc substrates.

36. An apparatus for bonding disc substrates according to claim 33, wherein said
15 emission mechanism has a plurality of light emitting diodes that generates said light.

37. An apparatus for bonding disc substrates according to claim 33, wherein said
emission mechanism has an annular ultraviolet light radiating lamp surrounding said
centering mechanism.

20 38. An apparatus for bonding disc substrates according to claim 33, wherein said disc mounting stage has a cooling medium distribution path for cooling said emission mechanism.

39. An apparatus for bonding disc substrates according to claim 33, wherein
25 said centering mechanism comprises;

a shaft which moves up and down inside the center hole of said disc substrates,
a drive mechanism which is connected to said shaft, and
an elastic body surrounding said shaft, which is put under pressure from above
when said drive mechanism lowers said shaft, and expands in a radial direction of said
5 disc substrates, and
when said elastic body expands, the elastic force presses against the internal
circumferences of said center holes of said first and second disc substrates.